1850MNRAS..10..116L

is at all reconcileable with its mass (if ascertained), under any probable hypothesis of density; but it has occurred to me that careful measures of the shadows of the satellites of *Jupiter* would afford the most likely means of getting at their real magnitudes, and I propose to take every opportunity of making such observations."

Additional Observations of the Phenomena of Jupiter and his Satellites, with the Twenty-foot Equatoreal. By Mr. Lassell.

"1850, March 10, M.T. $10^{h}\ 40^{m}$. Air less disturbed than usual. Power 316. The view of the planet uncommonly fine, with occasional intervals of atmospheric agitation. The central bright part of *Jupiter* is mottled or curdled, and indeed scarcely any part of his surface is of uniform texture.

"The southern portion is covered nearly up to the edge of the principal belt with a decided shade. With power 430 the third satellite is certainly not round, but the atmosphere is not fine enough for scrutinising satellites with this power. The fourth and third satellites are very near each other, and pretty well removed from *Jupiter*. The fourth is much paler than the third. The first satellite is obviously larger than the second — scarcely, I think, so bright.

"March 12, G.M.T. $11^{h}\ 25^{m}$, power 430. The air is unusually fine. I think I never saw so fine, so powerful a view of *Jupiter*. The third satellite is approaching the following limb of the planet, whose light, diminishing the brightness and radiation of the satellite, enables me to see it with admirable distinctness. There is certainly a *spot* on the satellite's disk, in the north preceding quadrant. Its disk also seems a little flattened on the following side.

G.M.T. h m s	
12 6 34.	The limbs of the 3d satellite and *Jupiter* are in contact.
12 8 30.	The satellite appears now the most beautiful round disk, and I am certain of seeing the spot upon it.
12 11 48.	The satellite bisected by *Jupiter's* limb.
12 16 6.	The following limbs of the planet and satellite in contact.
12 18 30.	The satellite is now a large *bright* round spot on the face of *Jupiter*, just within the limb.
12 21 30.	The satellite is getting fainter. I see nothing yet of the shadow. The satellite enters between two rather faint belts.
12 24 30.	I only see the satellite by glimpses. I have not yet caught sight of the shadow.
12 29 6.	I caught the first glimpse of the shadow.

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G.M.T.
h m s

12 33 46. I obtained a glimpse of the satellite as a *light brown spot*, and about ten seconds later I should estimate the bisection of the shadow to take place; but, my attention being directed to the reappearance of the satellite, I could not precisely note the time.

12 35 30. The satellite is a plain *dusky* spot.

12 39 35. The satellite is now a *dark, irregular* spot.

13 5 35. The satellite is now obviously *darker* than the darkest part of either of the principal belts, is about half the diameter of the shadow, and, though more nearly round, is still of an irregular figure.

13 12 25. The broad belt which now covers the southern pole of *Jupiter* is adorned with a number of bright, distinct, round spots, just like so many satellites on the face, only smaller. There are at least six, and I was enabled to mark roughly the places of five of them. This is to me quite a new phenomenon. The spots are very delicate, but very round and well defined, and, though only occasionally seen, when the air is most quiet, they undoubtedly exist, and there is no illusion. The shadow of the satellite seems to have a penumbra.

13 43 0. The air is now becoming more disturbed.

13 46 0. The satellite is now half-way over, still a little oblong. Its intensity of *shade* I should estimate to be half-way between the blackness of the shadow and the darkest parts of the belts; in *size* about two-thirds the diameter of the shadow.

"During a considerable portion of these observations the air has been remarkably fine—indeed a whole year does not yield five such nights; yet, with the power and aperture employed, the image of *Jupiter* was never *still*. The presence of the atmosphere never could be forgotten; and I received this evening a strong confirmation of the opinion I have long held, that a twenty-four-inch aperture, brought to high perfection of defining power, is not far from the maximum allowed by the atmosphere of this climate to be advantageously used on objects requiring fine *definition*."

Extract of a Letter from Mr Lassell.

"The times of emersion of shadow and satellite on March 5 were respectively about 7^{m} and 5^{m} earlier than the times in the *Nautical Almanac*, and the entry of the 4th satellite on the disc, Feb. 28, was about 8^{m} later than the time announced.

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